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(54) Multiple mesodermal lineage differentiation potentials for adipose tissue-derived stromal cells and uses thereof

(57) The invention relates to methods and compositions for the differentiation of stromal cells from adipose tissue into hematopoietic supporting stromal cells and myocytes of both the skeletal and smooth muscle type. The cells produced by the methods are useful in providing a source of fully differentiated and functional cells for research, transplantation and development of tissue engineering products for the treatment of human diseases and traumatic tissue injury repair.

EP 1 077 254 A3

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 7153

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X A	MAZINI L ET AL: "Mature accessory cells influence long-term growth of human hematopoietic progenitors on a murine stromal cell feeder layer." STEM CELLS, vol. 16, no. 6, 1998, pages 404-412, XP001041809 * the whole document *	79	C12N5/06 C12N5/08
X	COLLINS L S & DORSHKIND K: "A stromal cell line from myeloid long-term bone marrow cultures can support myelopoiesis and B lymphopoiesis" JOURNAL OF IMMUNOLOGY, vol. 138, no. 4, 15 February 1987 (1987-02-15), pages 1082-1087, XP002185250 * the whole document *	79	
A	WO 99 28444 A (HALVORSEN YUAN DI C ;ZEN BIO INC (US)) 10 June 1999 (1999-06-10)		TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	DE VRIES H J C ET AL: "Stromal cells from subcutaneous adipose tissue seeded in a native collagen/elastin dermal substitute reduce wound contraction in full thickness skin defects." LABORATORY INVESTIGATION, vol. 73, no. 4, 1995, pages 532-540, XP001041841		C12N
A	KELLY K A ET AL: "Murine bone marrow stromally derived BMS2 adipocytes support differentiation and function of osteoclast-like cells in vitro." ENDOCRINOLOGY, vol. 139, no. 4, April 1998 (1998-04), pages 2092-2101, XP001041790		

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 December 2001	Teyssier, B

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 00 30 7153

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 7153

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
T	STORMS R W ET AL: "Human subcutaneous adipose tissue-derived stromal cells support hematopoiesis." BLOOD, vol. 96, no. 11 Part 1, 16 November 2000 (2000-11-16), page 685a XP002185251 42nd Annual Meeting of the American Society of Hematology; San Francisco, CA; 1-5 December 2000 abstract 2951 ---	1-21, 44-61,79	
T	GIMBLE J M ET AL: "Adipose tissue: derived stromal cells are multipotent" JOURNAL OF BONE AND MINERAL RESEARCH, vol. 15, September 2000 (2000-09), page S508 XP000972512 abstract M217 -----		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 December 2001	Teyssier, B

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 30 7153

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-21, 44-61, 79

   Medium and method for differentiating adipose stromal cells into haematopoietic supporting cells.
   Haematopoietic cells obtained by culture on said supporting cells.

2. Claims: 22-43, 62-78

   Medium and method for differentiating adipose stromal cells into skeletal muscle myocytes or smooth muscle myoblasts.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 30 7153

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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11-12-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9928444 A	10-06-1999	AU 1615599 A	16-06-1999
		CN 1280612 T	17-01-2001
		EP 1036163 A1	20-09-2000
		WO 9928444 A1	10-06-1999

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82